Radiographic Positioning of the Foot & Ankle

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Positioning of the Foot & Ankle
RADIATION SAFETY

- It is your responsibility to limit X-Ray exposure to both the patient as well as yourself.
- Use appropriate lead aprons, lead gloves.
- Appropriately collimate X-ray to limit exposure.
- Stand behind protective barrier when making exposure.

- Pre-Plan to eliminate the need to re-expose the patient!
What is your office policy regarding questioning women of child bearing age as to whether or not they might be pregnant?
Dorsal Plantar / DP Foot WB

15 degrees

dorsal near the 2nd MT base
What are some indications for ordering this Projection?

What are some keys to proper positioning for this Projection?
Dorsal Plantar / DP Foot O

degrees

Marked Lesion

place CR near marker location
Dorsal plantar/ DP Projection
Marked Lesion

- What might be some indications for taking a marked lesion X-Ray?
  - Foreign Body.
  - Ulcer location to assess for infection.
  - Nucleated hyperkeratotic lesion – Which metatarsal is causing the excessive pressure.
What’s wrong with this positioning?
Lateral Raised Hallux WB

90 degrees
Lateral Raised Hallux
Lateral Hallux Alternate Method

[Image of a foot and a machine indicating 90 degrees]
Lateral 2nd Digit
Lateral Oblique Projection/Medial Oblique View Foot WB

40 degrees

dorsal lateral 3rd-5th MT bases

between 3rd -5th M.T. bases
Lateral Oblique Projection

- Third most common film view
- Completes “three views” that most physicians utilize
- Shows the lateral side of the foot well
- Good Visualization
  - Lateral toes, Metatarsals, Lisfranc Joint
- Tailors Bunion, Digital Fractures, Metatarsal Fractures, CN Bar (coaltion)
Lateral Oblique Projection
Lateral Oblique Projection (without loading the foot)
Medial Oblique Projection/Lateral oblique view Foot WB

25 degrees

dorsal- medial navicular & base of 1st MT

dorsal medial between base of 1st MT & navicular
Medial Oblique Projection
Medial Oblique Projection

- Shows medial side of the foot
- Good Visualization
  - 1st Metatarsal
  - Sesamoid Apparatus
  - Arthritis
- Tibial Sesamoid, Foreign bodies, 1st
- Metatarsal, Hallux, Fractures, Arthritis
Medial Oblique Projection Foot
WB alternate sesamoid

40 degrees
Medial Oblique Projection Foot

STANDARD: 25° Tube Angle

Alternative:
40° Tube Angle to Highlight Tibial Sesamoid
Medial Oblique Projection (without the foot loaded.)

The medial side of the foot is raised and closer to the X-Ray source.

Other colleges refer to this as a Lateral Oblique (view)

Tube angulation = 0°
Axial Sesamoid WB
Why would we take an axial sesamoid projection? What else do you see here that is abnormal?
Axial Sesamoid WB
Axial Calcaneoeal WB

25 degrees

posterior superior aspect of calcaneus
Axial View Calcaneus
ANKLE PROJECTIONS
Ankle Projections

- For **All** Ankle Projections:
  - The Cassette is **Vertical**
  - The patient is standing on a piece of felt.
  - The Tube angulation is **90°** (parallel to the floor).

- **What is changed is the positioning of the foot and ankle!**
Anterior Posterior Ankle WB
Mortise Ankle WB

90 degrees
Mortise View Ankle
A-P Projection

Mortise Projection
Lateral Ankle WB

lateral malleolus

90 degrees
Lateral Ankle
Lateral Foot and Ankle
Lateral Oblique Ankle WB
Lateral Oblique Ankle

Lat. Obl. Ankle = Foot Internally Rotated.
Medial Oblique Ankle WB
Medial Oblique Ankle

Externally Rotated
Partial Weight Bearing
Projection Selection

- Best demonstrate anatomy
  
  (knowledge of radiographic and podiatric anatomy critical)

- Three projection rule- two at 90°, third-oblique

  - fractures
  - foreign body
  - infection
  - articular disorders
  - masses
Why 3 views???
Why 3 views???
CaT SPEX

Cassette Placement
Tube Position
Set Exposure Time
POSITION
THE
PATIENT
Expose the image

OKAY CLASS LISTEN

TODAY I TEACH YOU ABOUT THE RED DOT
CaT SPEEx

**Cassette**

**T**ube

**Set**

**Expose**

**Position**

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<table>
<thead>
<tr>
<th>PROJECTION</th>
<th>TUBE ANGLE</th>
<th>SIZE (CM)</th>
<th>TIME</th>
<th>mA</th>
<th>KVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>LATERAL FOOT</td>
<td>15 degrees</td>
<td>0-5</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>LATERAL LLSEON</td>
<td>90 degrees</td>
<td>6-9</td>
<td>10</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>RAISED HALLUX</td>
<td>90 degrees</td>
<td>1-2</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>MEDIAL OBLIQUE</td>
<td>40 degrees</td>
<td>3-5</td>
<td>6</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>AXIAL CALCANEAL</td>
<td>25 degrees</td>
<td>4-6</td>
<td>7</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>PHILIPS</td>
<td>HS 120</td>
<td>120</td>
<td>120</td>
<td></td>
<td></td>
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<tr>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td></td>
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</tr>
</tbody>
</table>

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*Use metallic wire as marker.*
CaT SPEX

Tube

Part

Cassette/Image Receptor

Set

Expose
Helpful Hints

- Long axis of film and long axis of anatomy should be parallel.
**Hints**

- **Film placement continued:**
  Lateral foot, hallux, digit and axial sesamoid cassette in slot.
Hints

- All weight bearing ankles 90 degrees
- Vertical position of cassette
Placing Two Images on Single Film

Rectangular Lead Blocker
Hints
Two Images – Lateral Oblique
Split Film - Images

Lateral Oblique

Dorsoplantar

loss of soft tissue
Mentally prepare before moving patient:

- Determine how many projections will you be taking on each patient.
- Organize yourself:
  - Do both AP Projections, then do both lateral projections, then both lateral oblique projections.
- Make sure soft tissue margins are easily seen!
- Always check your light shadow to see what will be found on final image!!!!
SEQUENCING

- Position Cassette – Flat or Vertical
- Determine Tube Angulation
- Collimate area to be exposed (what is area within lighted field).
- Place Right/Left Marker
- Determine Technical Parameters
- Determine patient positioning (direction, need for felt pad).
SEQUENCING

- ALL OF THE ABOVE SHOULD BE DONE BEFORE THE PATIENT IS POSITIONED!

- Now Patient can be positioned and part to be X-Rayed can be placed onto cassette.

- Check light shadow.

- Exposure can now be made!
CONCLUSION

- Positioning patients for radiographs can be stressful.
- Organize thoughts as to how many projections will be taken.
- Protect yourself and patient from radiation exposure.
- Set up as much as possible **BEFORE** you position the patient.
Thank you!

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